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Evaluating Population Level Impacts of Sperm Limitation on the Chesapeake Blue Crab Stock

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Chesapeake Bay Program
A Watershed Partnership

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Impacts of Blue Crab Sperm Limitation

- *PIs*:
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  - Eric Johnson, University of North Florida, & SERC
- *Partners*:
  - NOAA Chesapeake Bay Office
  - Chesapeake Stock Assessment Committee
  - Romuald Lipcius, Virginia Institute of Marine Science
  - Maryland Watermen's Association

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Impacts of Blue Crab Sperm Limitation

- *Rationale*: Fishery & management are drastically altering sex ratio of both bay-wide and local blue crab populations, reducing reproductive output. Reproductive output depends on sperm that the female receives in a single lifetime mating at maturity molt. Mating season occurs when intense fishing is reducing the "operational sex ratio" and limiting sperm.

- *Objective*: (1) Determine if fishing in mating habitats is reducing operational sex ratio to point of sperm limitation. (2) Assess whether variation in sperm stores of lower Bay spawning stock is limiting female reproductive output.

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Impacts of Blue Crab Sperm Limitation

Approach: Compare sperm counts in female blue crabs among:

- Tributaries that differ in fishing pressure:

  Predict low sperm stores in females mating in sites with intense trotlining.

- Years that differ in crab abundance:

  Predict low sperm stores in years of intense fishing on males.

- Time of season:

  Predict low sperm stores late in season.

- Number of seasons females produce eggs:

  Predict low sperm stores in 2nd season females season .

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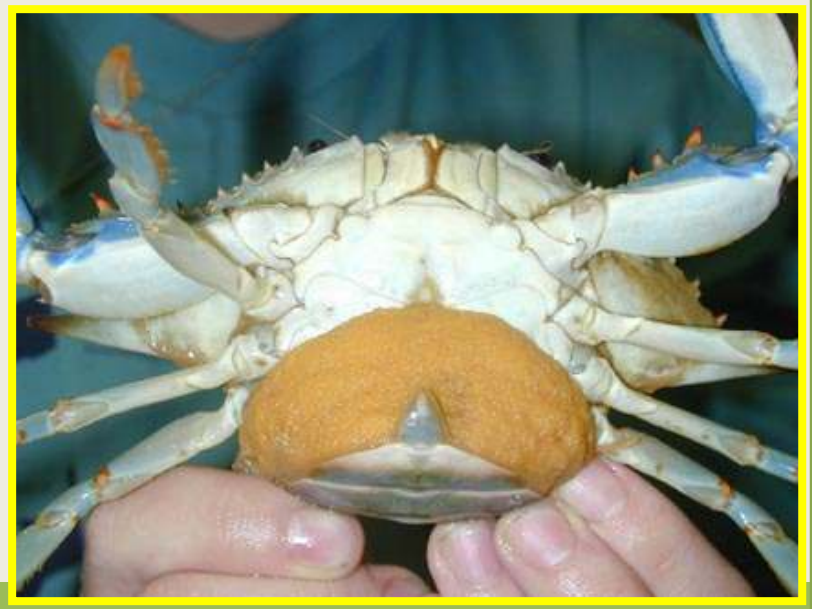
Impacts of Blue Crab Sperm Limitation

Potential relevance/impacts

- Manage fishing to maximize reproductive output measured as fertile eggs & sperm stores.
- Spatial management of fishing pressure (esp. trotlining in MD tributaries).
- Maximize

  Operational Sex Ratio

  in August in mating habitat



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